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EXPEDITED PROCEDURE
GROUP ART UNIT 2672

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
: KIYOHIDE SATOH, ET AL.)
: Appln. No.: 09/658,463)
: Filed: September 8, 2000)
: For: AUGMENTED REALITY)
: PRESENTATION APPARATUS AND :
: METHOD, AND STORAGE MEDIUM)

Examiner: J. Wang

Group Art Unit: 2672

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March 15, 2004

Technology Center 2600

Commissioner for Patents
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P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR RECONSIDERATION

Sir:

In response to the Official Action mailed January 15, 2004, Applicants respectfully request reconsideration and allowance in view of the following remarks.

Claims 1, 3, 4, 6-10, 12-19, 24-29, 31 and 32 remain pending in the application, with Claims 1, 10, 19, 31 and 32 being independent.

Claims 1, 3, 4, 6-10, 12-19, 24-29, 31 and 32 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,522,312 (Ohshima et al.) in view of U.S. Patent No. 6,624,853 (Latypov) and U.S. Patent No. 6,445,815 (Sato). This rejection is respectfully traversed.

As is recited in independent Claim 1, the present invention relates to an augmented reality presentation apparatus for superimposing a virtual object in a real space, characterized by including objective viewpoint augmented reality presentation means for superimposing the virtual object viewed from a first viewpoint position, which differs from any player's viewpoint position, in the real space viewed from the first viewpoint position. The objective viewpoint augmented reality presentation means includes first video sensing means, first video generation means, first video composition means and objective viewpoint video display means. The first video sensing means senses a video of the real space viewed from the first viewpoint position. The first video generation means generates a video of the virtual object viewed from the first viewpoint position. The first video composition means composes an augmented reality video viewed from the first viewpoint position on the basis of the videos of the real space and the virtual object viewed from the first viewpoint position. The objective viewpoint video display means displays the augmented reality video obtained from the first video composition means on a screen of a predetermined display apparatus. The apparatus further includes player's viewpoint augmented reality presentation means for superimposing the virtual object viewed from the player's viewpoint position in the real space viewed from the player's viewpoint position. The player's viewpoint augmented reality presentation means includes second video

sensing means, player's viewpoint position acquiring means, second video generation means, second video composition means and display means. The second video sensing means senses a video of the real space viewed from the player's viewpoint position. The player's viewpoint position acquiring means acquires information indicating the player's viewpoint position. The second video generation means generates a video of the virtual object viewed from the player's viewpoint position using the information indicating the player's viewpoint position. The second video composition means composes an augmented reality video viewed from the player's viewpoint position on the basis of the videos of the real space and the virtual object viewed from the player's viewpoint position. The display means displays to the player the augmented reality video viewed from the player's viewpoint position on a screen of a player's display apparatus separate from the predetermined display apparatus.

With the above arrangement, an augmented reality video can be generated according to a player's viewpoint and displayed on a screen in a player's head mounted display and an augmented reality video can be generated according to another viewpoint different from the player's viewpoint and displayed on a screen of a predetermined display apparatus different from the player's head mounted display. This augmented reality video according to the other viewpoint can be viewed by a third party other than the player.

Ohshima et al. is directed to an apparatus for presenting mixed reality shared among operators. As shown in Fig. 2, an air hockey game can be presented in mixed reality space for two players. The table 1000 and mallets 260L, 260R are real objects and the puck is a virtual object. As understood by Applicants, TV camera 230 is

fixed above the center of table 1000 and can capture the entire surface of the table 1000 within its field of view. Mallet position measurement unit 5010 detects the position of the mallets from an image captured by TV camera 230 and outputs a result of the detection to game status management unit 5030. This unit determines the next position of the puck based on the detected mallet positions and a current managed position of the puck. The computer generation of the puck according to position and posture of each player is generated, and is outputted to the head mounted display 210 after being superimposed on the image captured by camera 230.

That is, as understood by Applicants, in Ohshima et al. the image captured by TV camera 230 is not an image to be presented to a third party other than a player, but is used for determining the next position of the mallet 260 by the mallet position measuring unit 5010. Ohshima et al. may disclose a technique for generating an image of a player's viewpoint and displaying the generated image to the player's head mounted display, but Ohshima et al. fails to disclose or suggest superimposing a virtual object viewed from a first viewpoint position, which differs from any player's viewpoint position, in a real space viewed from the first viewpoint position, and displaying an augmented reality video viewed from the first viewpoint position on a screen of a predetermined display apparatus, as is recited in independent Claim 1.

Thus, Ohshima et al. fails to disclose or suggest important features of the present invention recited in this independent claim.

Latypov relates to a method and system for creating video programs in a virtual studio. An image according to a position and orientation of an actor can be

displayed. Such image is obtained by superimposing a virtual image with an image captured by a TV camera. However, like Ohshima et al., Latypov merely discloses generating an image according to the actor's position and orientation (corresponding to the player's viewpoint) and displaying the image generated based upon the position and orientation of the actor. Latypov does not teach generating an image according to a viewpoint other than a player's viewpoint and displaying the image on a predetermined display apparatus separate from a player's display apparatus. Therefore, Latypov fails to remedy the deficiencies of Ohshima et al. noted above with respect to the independent claims.

Sato has also been reviewed but is not believed to be any more relevant than the citations discussed above.

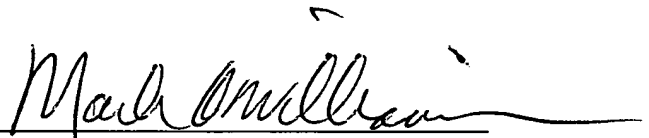
For the foregoing reasons, Applicants submit that Claim 1 is patentable over the citations of record. Independent Claims 10, 19, 31 and 32, recite similar features, and are believed to be patentable for similar reasons. Reconsideration and withdrawal of the § 103 rejection are respectfully requested.

For the foregoing reasons, Applicants respectfully submit that the present invention is patentably defined by independent Claims 1, 10, 19, 31 and 32. Dependent Claims 3, 4, 6-9, 12-18 and 24-29 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicants submit that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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